

AMES LABORATORY, CHEMICAL DISPOSAL SITE

(Ames, Iowa)

GENERAL DESCRIPTION

The Ames Laboratory Chemical Disposal (CDS) site is located north of Ontario Street on Scholl Road, Ames, Iowa. The site occupies 2 acres in the Southeast 1/4 of the Northeast 1/4 and in the Northeast 1/4 of the Southeast 1/4 of Section 32, T84N, R24W, Story County, Iowa. The site is owned by Iowa State University and was entered on the Registry in July 1991.

SITE CLASSIFICATION

The site is classified “d” Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **The types of hazardous waste at this site are radioactive materials, volatile organic compounds and heavy metals**

Ames Laboratory operated by the Iowa State University (ISU) Institute for Physical Research and Technology, for the U.S. Department of Energy (DOE). Starting in the early 1950s the site was used as an uncontrolled disposal area for the laboratory equipment and chemicals from ISU researchers. The quantities and types of materials disposed of during that period are unknown.

In the late 1950s, ISU erected a fence around the area of the chemical disposal site. From 1957 to 1966 the site was used for the disposal of radioactive materials and hazardous chemicals. Nine unlined pits, used to bury radiological and hazardous chemicals contained in steel pails, drums and plywood boxes, were located at the southeast corner of the CDS site. Substances identified as buried at the site include thorium waste, uranium waste, beryllium oxide, yttrium, asbestos, lithium, mercury, thallium salts, cyanide, and zirconium.

Another location within the fenced area (west of the pits) was used to burn uranium metal shavings and other debris directly on the ground surface. Remediation of the burn area was conducted in 1980 and again in 1987. Surface contamination was also discovered in 1987 and was partially remediated. A soil investigation conducted in 1990 revealed elevated levels of thorium and uranium in several areas of the CDS.

Assessment activities at the site include groundwater monitoring and soil sampling. In 1993, groundwater contamination with radioactive isotopes was found in the on-site alluvial aquifer. Further assessment of the extent of groundwater contamination was completed in 1998. The groundwater remains contaminated with radioactive materials, volatile organic compounds and heavy metals. The heavy metal concentration of uranium is as high as 7,500 ug/L, while the Gross Alpha and Beta measurements of radionuclides in groundwater are as high as 2,600 pCi/L. The safe drinking water standard (MCL) for Gross Alpha is 15 pCi/L.

SUMMARY OF HEALTH AND ENVIRONMENTAL IMPACTS

- **The primary environmental and public health concern is exposure to radioactive waste.**

The Ames Laboratory Chemical Disposal site is located within the city of Ames, Iowa. The site is situated at the head of a ravine that drains to Squaw Creek approximately 1,800 feet west of the site. The creek flows five miles to the southeast into the South Skunk River. The Ames water wells are located approximately three miles east and southeast of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIATION

The U.S. Department of Energy provided funding to Ames Laboratory and Iowa State University to conduct a site assessment to fully characterize the contamination at the site. An Interim Removal Action (IRA) was proposed by Ames Laboratory and approved by the department in April 1993. The IRA was conducted in 1994. As part of the removal action, the area of the nine burial pits was excavated to an average depth of nine feet. Approximately 2,000 cubic yards of contaminated soil and debris were removed to a disposal facility. A walkover survey was conducted in September 1995, which revealed radiation hotspots. Contaminated soil was removed from two of the hotspots until radiation levels were below twice background.

Monitoring wells at the site were removed prior to the 1994 excavation. New monitoring wells were installed in 1995 as part of a final Phase II Remedial Investigation. The report of the investigation was submitted in August 1996 along with a Focused Feasibility Study/Proposed Plan. The report concluded the groundwater contamination exceeded acceptable risk-based criteria. The EPA, Iowa DNR, Iowa Department of Health, and Iowa State University all expressed concerns over the residual soil contamination and level of groundwater pollution at the site. All the regulatory agencies requested additional site investigation and expanded groundwater monitoring.

Additional assessment work was initiated in the spring of 1997, including an investigation into the bedrock. Surface and sub-surface soil samples were collected to further identify the extent of soil contamination. This assessment was completed in 1998 and the information obtained from this investigation was used to determine what further remedial action is required at the site.

Surface soils with radiation levels more than twice background were removed in August 1998 (six 55-gallon drums). The area was resurveyed for compliance in September 1998. The groundwater plume was determined to be in a steady state at the site and was not expected to be a threat to Squaw Creek or the public water supply. The Iowa Department of Public Health determined no further action was necessary other than annual groundwater monitoring.

2008: Annual ground water monitoring was conducted from 2002 through 2007 for gross alpha and gross beta, thorium and uranium. Analytical results indicated that there is no migration of residual contamination beyond the defined plume (see map). The IDNR as granted approval to terminate ground water monitoring at the site but it will remain listed on the Registry due to existing ground water plume.



CHEMICAL DISPOSAL SITE
ESTIMATED GROUNDWATER PLUME
GROSS ALPHA CONTAMINATION
AMES LABORATORY
AMES, IOWA

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